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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/604,822	08/20/2003	Hong-Bin Hsu	11259-US-PA	1821

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JIANQ CHYUN INTELLECTUAL PROPERTY OFFICE
7 FLOOR-1, NO. 100
ROOSEVELT ROAD, SECTION 2
TAIPEI, 100
TAIWAN

EXAMINER

SHAPIRO, LEONID

ART UNIT	PAPER NUMBER
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2629

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	12/20/2006	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No. 10/604,822	Applicant(s) HSU, HORNG-BIN	
	Examiner Leonid Shapiro	Art Unit 2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 September 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 5-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 5-7 and 9-12 is/are rejected.
- 7) ☒ Claim(s) 8 and 13 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 August 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the limitations of claims 9-10: "each of the segments contains the same or different numbers of the grayscale values respectively" must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

2. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required:

The limitations of claims 9-10: "each of the segments contains the same or different numbers of the grayscale values respectively" are not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claim 9-10 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The limitations of claims 9-10: "each of the segments contains the same or different numbers of the grayscale values respectively" are not shown in Figures or described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 5-6, 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Asao et al. in view of Watanabe.

As to claim 5, Asao et al. teaches a driving method of a Liquid Crystal Display (LCD) (See Col. 1, Lines 7-12), the liquid crystal display comprising a back-light module (See Fig. 19, item 101) and a liquid crystal display panel (See Fig. 19, item 80), wherein the liquid has a plurality of pixels (See Col. 1, Lines 13-15), the driving method of the liquid crystal display comprising the steps of:

dividing a plurality, of grayscale values 0, 1, 2, ..., N into a plurality of segments, where N is the highest grayscale of the image display system (in the reference is equivalent to gradational display state) (See Fig. 7, item T1, Col. 27, Lines 8-33);

adjusting brightness of the back-light module (See Fig. 21, items Light Source, R1-R2, Col. 8, Lines 15-42 and 1-2), and

adjusting a grayscale value X_a of each pixel to a mapping grayscale value X_b (in the reference is equivalent to gradational display state), and driving each of

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the pixels with the grayscale value X_b accordingly (See Fig. 14, items Tx, Ty, Col. 7, Lines 43-55 and Col. 26, Lines -56).

Asao et al. does not disclose

detecting the maximum grayscale X of all pixels in the present image;

adjusting brightness of the back-light module to $(Y / N) \times L$, where N is the highest grayscale of the image display system, and L is a corresponding brightness to the grayscale value N of the back-light module.

Watanabe teaches

detecting the maximum grayscale X of all pixels in the present image (See Figure, item 7, Solution);

adjusting brightness of the back-light module to $(Y / N) \times L$, where N is the highest grayscale of the image display system, and L is a corresponding brightness to the grayscale value N of the back-light module in the reference $L = 100$, $Y = 30$, $N = 100$, so $(Y / N) \times L = 30\%$ (See Solution).

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate teaching of Watanabe into Asao et al. system in order to maximize contrast and reduce power consumption (See Problem To Be Solved in the Watanabe reference).

As to claim 12, Asao et al. teaches a driving method of a Liquid Crystal Display (LCD) (See Col. 1, Lines 7-12), the liquid crystal display comprising a back-light module (See Fig. 19, item 101) and a liquid crystal display panel (See Fig. 19, item 80),

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wherein the liquid has a plurality of pixels (See Col. 1, Lines 13-15), the driving method of the liquid crystal display comprising the steps of:

dividing a plurality, of grayscale values 0, 1, 2, ..., N into a plurality of segments, where N is the highest grayscale of the image display system (in the reference is equivalent to gradational display state) (See Fig. 7, item T1, Col. 27, Lines 8-33);

adjusting brightness of the back-light module (See Fig. 21, items Light Source, R1-R2, Col. 8, Lines 15-42 and 1-2), and

adjusting a grayscale value Xa of each pixel to a mapping grayscale value Xb (in the reference is equivalent to gradational display state), and driving each of the pixels with the grayscale value Xb accordingly (See Fig. 14, items Tx, Ty, Col. 7, Lines 43-55 and Col. 26, Lines -56).

Asao et al. does not disclose

detecting the maximum grayscale X of all pixels in the present image.

Watanabe teaches

detecting the maximum grayscale X of all pixels in the present image (See Figure, item 7, Solution).

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate teaching of Watanabe into Asao et al. system in order to maximize contrast and reduce power consumption (See Problem To Be Solved in the Watanabe reference).

As to claim 6 Asao et al. teaches a mapping correlation between the grayscale value X_a (in the reference is equivalent to the higher (first) luminance) and the grayscale value X_b (in the reference is equivalent to the lower (second) luminance) is linear (in the reference is equivalent to 1/5) and the correlation is performed as $X_b = (X_a/X) \times N$ (in the reference is equivalent to 1/5) (See Fig. 14, items Tx, Ty, Col. 7, Lines 43-55 and Col. 26, Lines -56).

As to claim 8, Lin teaches the corresponding output brightness is retained when the grayscale maximum X is located in either a range between $Z+S$ and Z of a present image, where Z is lower limit of one of the segments (in the reference minimum value of pixels generated at that location) (See Fig. 2A, items k00-k20, location 3-5, Col. 4, Lines 47-65).

As to claims 11 Asao et al. teaches light transmittance of each of the pixels is adjusted by a bias voltage based on the grayscale value (in the reference is equivalent to gradational display state) (See Fig. 14, items Tx, Ty, Col. 26, Lines 33-56).

5. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Asao et al., Watanabe as applied to claim 5 above, and further in view of Kori et al.

Asao et al. and Watanabe do not disclose a mapping correlation between the grayscale value X_a and the grayscale value X_b is nonlinear.

Kouri et al. teaches a mapping correlation between the grayscale value X_a and the grayscale value X_b is nonlinear (See paragraph 0786).

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate teaching of Kouri et al. into Watanabe and Asao et al. system in order to improve signal (See paragraph 0007 in the Kouri et al. reference).

Response to Arguments

6. Applicant's arguments with respect to claim 5-7,9-12 have been considered but are moot in view of the new ground(s) of rejection.

Allowable Subject Matter

7. Claims 8,13 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Relative to claim 8 the major difference between the teaching of the prior art of record (Asao et al., and Watanabe) and the instant invention is that wherein the corresponding output brightness of the backlight module is retained when grayscale maximum X is located in either a range between Y and Y + S or a range between Z - S and Z of a present image, where Z is lower limit of one of the segments in which segment the grayscale maximum X is located and S is the predetermined threshold.

Relative to claim 13 the major difference between the teaching of the prior art of

record (Asao et al., and Watanabe) and the instant invention is that a mapping correlation between the grayscale value X_a and the grayscale value X_b is linear, and the mapping correlation is performed as $X_b = (X_a / Y) \times N$, where Y is a upper limit of one of the segments in which the maximum grayseale X is located.

Telephone Inquire

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leonid Shapiro whose telephone number is 571-272-7683. The examiner can normally be reached on 8 a.m. to 5 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Hjerpe can be reached on 571-272-7691. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LS
12.20.06



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